



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/010,633	11/07/2001	Li-Anne Liew	13743.101	4899

24283 7590 06/08/2004

PATTON BOGGS
1660 LINCOLN ST
SUITE 2050
DENVER, CO 80264

EXAMINER

DAHBOUR, FADI H

ART UNIT PAPER NUMBER

3743

DATE MAILED: 06/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/010,633

Applicant(s)

LIEW ET AL.

Examiner

Fadi H. Dahbour

Art Unit

3743

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 16-51 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 19, 24 and 26-30 is/are allowed.
- 6) ☒ Claim(s) 16-18, 20, 22, 23, 25, 31-33 and 40-49 is/are rejected.
- 7) ☒ Claim(s) 21, 34-39, 50 and 51 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 November 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. The Examiner acknowledges Applicant's submission of the election of claims 16-51, filed on 03/04/2004. Claims 1-15 being canceled.

Claim Objections

2. Claim 21 is objected to because of the following informality:

At line 1 of the claim, the term "claim 19" should be changed to --claim 20--.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

4. Claims 16-18, 20, 22-23, 25, 31-32, 43-44, 47 are rejected under 35 U.S.C. 102(e) as being anticipated by McPhillips ('890).

McPhillips discloses a micro-glow plug made from a single ceramic material comprising silicone, carbon and nitrogen (see "silicon carbide SiC" and "N" in lines 6 & 11 of col.2), in which the largest dimension is 2 mm or less (Fig.7, also see "as small as 2 grams" in line 19 of abstract), and with a glow tip of a size 0.2 mm or less (112 of Fig.7), further comprising 1.0 watt of power to reach and maintain its highest operating temperature (see "power consumption 1... W" in lines 17-18 of col.10), further comprising a current carrying section for carrying current to the glow tip (Fig.7), and a plurality of contact pads for connecting to an electrical circuit (Fig.7), the glow tip having an electrical resistance of ten times or more as compared to the current carrying section (see "the neck 112 should be in the range of about 10 to 50 times the resistance across either of the terminal zones 116" in lines 48-50 of col.8), further comprising a ceramic heating element having a first arm having a first width (Fig.7), a second arm having a second width (Fig.7), and a tip having a third width that is less than the first and second widths (Fig.7), the first arm and second arm connected to the tip (Fig.7), a first connecting apparatus for electrically connecting a voltage source across the first arm and the second arm so that when current is applied to the connecting apparatus a current flows through the ceramic heating element (Fig.7), wherein the current density at the tip is increased due to the decreased third width of the tip (Fig.7) to generate a high operating temperature at the tip while the first arm and the second arm remain relatively cool (see "hot zone 114" in line 27 of col.8), wherein the first width and the second width are substantially equal (Fig.7), further comprising a metallic element comprising boron or aluminum (see "B" and "Al" in line 12 of col.2).

5. Claims 31-32, 41, 48-49 are rejected under 35 U.S.C. 102(b) as being anticipated by Okuda et al ('958).

Okuda discloses a micro-glow plug (Figs.1-37) made from a single ceramic material comprising silicon, carbon and nitrogen (see "inorganic conductive material should have a composition of 65 to 95 weight % of tungsten carbide WC and 5 to 35 weight % of silicon nitride Si₃N₄" in lines 62-64 of col.6) in which the largest dimension is 2 mm or less (see "1.5 mm" in line 20 of col.13), and with a glow tip of a size 0.2 mm or less (Fig.7), wherein the glow tip reaches a temperature of from 1200°C to 1600°C for ignition (see "1400°C" in line 29 of col.42), comprising an array of micro-glow plugs connected on a single supporting device wherein the total number of micro-glow plugs range from two to one thousand (Figs.1-2, 11, 15, 18, 25-26, 30).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 25, 33, 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over McPhillips ('890) in view of Koshkarian et al ('349).

McPhillips, as described above, discloses all the features claimed except an oxide coating. Koshkarian discloses an oxide coating (see abstract). It would have been obvious to one having ordinary skill in the art at the time the invention was made,

to have the feature taught by Koshkarian, in the device of McPhillips, because Koshkarian teaches that it is "for protecting the glow plug against the corrosive/erosive environment" (see lines 3-4 of abstract of Koshkarian).

8. Claims 41-42, 45-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over McPhillips ('890).

Regarding claims 41-42, McPhillips, as described above, discloses all the features claimed except a temperature of 1500°C. It would have been obvious to one having ordinary skill in the art at the time the invention was made, to have a temperature of 1500°C, because McPhillips teaches that how hot the tip's hot zone can get is "depending on how sharply the designer wishes to define the hot zone 114" (see lines 45-46 of col.8, also see 114 in Fig.7 of McPhillips).

Regarding claims 45-46, McPhillips, as described above, discloses all the features claimed except reaching glow temperature in 0.5 seconds or less from cold start. It would have been obvious to one having ordinary skill in the art at the time the invention was made, to reach glow temperature in 0.5 seconds or less from cold start, because McPhillips teaches that "the small size of the igniter of the present invention provides several advantages...being able to heat up more rapidly to its required use temperature" (see lines 8-9, 12-13 of col.10). Thus, it would have been obvious to achieve a desired "heat up" time, by choosing the appropriate size of the igniter which would result in such a time.

9. Claims 33, 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okuda et al ('958) in view of Koshkarian et al ('349).

Okuda, as described above, discloses all the features claimed except an oxide coating. Koshkarian discloses an oxide coating (see abstract). It would have been obvious to one having ordinary skill in the art at the time the invention was made, to have the feature taught by Koshkarian, in the device of Okuda, because Koshkarian teaches that it is "for protecting the glow plug against the corrosive/erosive environment" (see lines 3-4 of abstract of Koshkarian).

10. Claim 42 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okuda et al ('958).

Okuda, as described above, discloses all the features claimed except a temperature of 1500°C. It would have been obvious to one having ordinary skill in the art at the time the invention was made, to have a temperature of 1500°C because Okuda teaches "high temperatures of 1400°C or more" which is reasonably close to 1500°C (see line 29 of col.42 of Okuda).

Allowable Subject Matter

11. Claims 19, 24, 26-30 are allowed.

12. Claims 34-39, 50-51 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

13. Claim 21 would be allowable if rewritten to overcome the objection(s) set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fadi H. Dahbour whose telephone number is 703-306-5479. The examiner can normally be reached on M-F, 9am-5:30pm est.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Henry A. Bennett, can be reached on (703) 308-0101. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Fadi H. Dahbour
Examiner
Art Unit 3743